## III 20 MM BULLEYOS

<223>

## SEQUENCE LISTING

```
McCallum, Claire
      Slade, Ann J.
      Colbert, Trent
      Knauf, Vic
      Anawah Inc.
<120> Tomatoes Having Reduced Polygalacturonase Activity Caused by Non-
      Transgenic Mutations in the Polygalacturonase Gene
<130> MBHB 02-276
<160> 50
<170> PatentIn version 3.1
<210> 1
<211> 7456
<212> DNA
<213> Lycopersicon esculentum
<220>
<221> CDS
<222> (1479)..(1757)
<223>
<220>
<221> CDS
<222> (2416)..(2547)
<223>
<220>
<221> CDS
<222> (3327)..(3491)
<223>
<220>
<221> CDS
<222> (3696)..(3716)
<223>
<220>
<221> CDS
<222> (4260)..(4467)
<223>
<220>
<221> CDS
<222> (4567)..(4648)
```

```
<220>
<221> CDS
<222> (5602)..(5710)
<223>
<220>
<221> CDS
<222>
      (6139)..(6255)
<223>
<220>
<221> CDS
<222>
     (6788)..(7045)
<223>
<400> 1
aagcttctta aaaaggcaaa ttgattaatt tgaagtcaaa ataattaatt ataacaatgg
                                                                60
taaagcacct taagaaacca tagtttgaaa ggttaccaat gcgctatata ttaatcaact
                                                               120
                                                                180
tgataatata aaaaaaattt caattcgaaa agggcctaaa atattctcaa agtattcgaa
atggtacaaa actaccatcc gtccacctat tgactccaaa ataaaattat tatccacctt
                                                                240
                                                                300
tgagtttaaa attgactact tatataacaa ttctaaattt aaactatttt aatactttta
360
                                                                420
accaactace aacteattaa teattaaate eeacceaaat tetaetatea aaattgteet
aaacactact aaaacaagac gaaattgttc gagtccgaat cgaagcacca atctaattta
                                                                480
ggttgagccg catatttagg aggacacttt caatagtatt tttttcaagc atgaatttga
                                                                540
aatttaagat taatggtaaa gaagtagtac acccgaatta attcatgcct tttttaaata
                                                                600
taattatata aatatttatg atttgtttta aatattaaaa cttgaatata ttatttttaa
                                                                660
                                                                720
aaaaattato tattaagtao catcacataa ttgagacgag gaataattaa gatgaacata
                                                                780
840
ttataacaaa tatttgagcg ccatgtattt taaaaaaatat taaataagtt tgaatttaaa
                                                                900
acceptagat aaategetcaa tittegaacce aaaagtegat gagaaggeta tittagagee
                                                                960
aataggggga tgagaaggat attttgaagc caatatgtga tggatggagg ataattttgt
atcatttcta atactttaaa gatattttag gtcattttcc cttctttagt ttatagacta
                                                               1020
tagtgttagt tcatcgaata tcatctatta tttccgtctt aaattatttt ttattttata
                                                               1080
aatttttaaa aaataaatta ttttttccat ttaactttga ttgtaattaa tttttaaaaa
                                                               1140
```

ttaccaacat ataaataaaa ttaatattta acaaagaatt gtaacataat atttttttaa	1200
ttattcaaaa taaatatttt taaacatcat ataaaagaaa tacgacaaaa aaattgagac	1260
gggagaagac aagccagaca aaaatgtcca agaaactctt tcgtctaaat atctctcatc	1320
caaactaata taatacccat tacaattaac catattgacc aactcaaacc ccttaaaatc	1380
tataaataga caaacccttc ccatacctct tatcataaaa aaaataataa tctttttcaa	1440
tagacaagtt taaaaaccat accatataac aatatatc atg gtt atc caa agg aat Met Val Ile Gln Arg Asn 1 5	1496
agt att ctc ctt ctc att att ttt gct tca tca att tca act tgt Ser Ile Leu Leu Ile Ile Ile Phe Ala Ser Ser Ile Ser Thr Cys 10 15 20	1544
aga agc aat gtt att gat gac aat tta ttc aaa caa gtt tat gat aat Arg Ser Asn Val Ile Asp Asp Asn Leu Phe Lys Gln Val Tyr Asp Asn 25 30 35	1592
att ctt gaa caa gaa ttt gct cat gat ttt caa gct tat ctt tct tat  Ile Leu Glu Gln Glu Phe Ala His Asp Phe Gln Ala Tyr Leu Ser Tyr  40 45 50	1640
ttg agc aaa aat att gaa agc aac aat aat att gac aag gtt gat aaa Leu Ser Lys Asn Ile Glu Ser Asn Asn Asn Ile Asp Lys Val Asp Lys 55 60 65 70	1688
aat ggg att aaa gtg att aat gta ctt agc ttt gga gct aag ggt gat Asn Gly Ile Lys Val Ile Asn Val Leu Ser Phe Gly Ala Lys Gly Asp 75 80 85	1736
gga aaa aca tat gat aat att gtaagtattt aaatattgga atatatttgt Gly Lys Thr Tyr Asp Asn Ile 90	1787
ggggatgaaa atgatagaga atataagaat tatttggaag gatgaaaagt tatattttat	1847
aaagtagaaa attattttct cgtttttagt attaaggtga aaatgagttt ctcgttaagc	1907
gaggaaaagc tattttccat ggtaactgta ttttttttt acttttaata acgtcatagt	1967
atttgctata ctcaagaata agacacttat tattgatgat ttagtgctcg aaaagaaatt	2027
gatagtaatt ttgcttaata taactatcaa tttcttatat gtatattttt caaccaaaat	2087
aacaaagcgt aatccaataa gtgggcctct agaataaaga gtaagttcta ttcaattctt	2147
aaccttattt aattttagtg gaaacctcga caaaaacgaa caaacgtatt caaactttta	2207
tattcggaat tcgagaccaa ccatatgaac aacctcacac atgcatatag tcctaatata	2267
tataattttt ctaaaaaata tottoaatot accatattga aatattgaaa aatgactttt	2327
atcctatcga acacataatc aagagtttct tttaagaatt taccactaca tttggtatgt	2387

ttcttatcgt gttaaaatta tctttcag gca ttt gag caa gca tgg aat gaa Ala Phe Glu Gln Ala Trp Asn Glu 95 100	2439
gca tgt tca tct aga aca cct gtt caa ttt gtg gtt cct aaa aac aag Ala Cys Ser Ser Arg Thr Pro Val Gln Phe Val Val Pro Lys Asn Lys 105 110 115	2487
aat tat ctt ctc aag caa atc acc ttt tca ggt cca tgc aga tct tct Asn Tyr Leu Leu Lys Gln Ile Thr Phe Ser Gly Pro Cys Arg Ser Ser 120 125 130	2535
att tca gta aag gttagcatat tgattattta tatcctcttt gttagcaata Ile Ser Val Lys 135	25.87
tattatctgg tttatgacaa aatttaagaa agtaatcaaa gatagataaa caatgaattt	2647
togtoactaa totagoggat tagoggaa toatoaaaat gotatgotag coatgagoaa	2707
cttagctatg aattagctag tgaagaagtt tgatgctaat tctattttt ttttgtagag	2767
taaagatatt tgaaacacat gtattaatta ttaattatgt cttaattaat atgtcaatgg	2827
atagttcaaa ctaaagaact gtcaaaagaa aataagaaag aaatatttat ttttaaaata	2887
aattaaaaag aaaaatatga gaaataaatt caaagcgaga aggtattaca taatctatgg	2947
ggataaaagg atattatata tgtaagaaaa cagcactaca catatctaat aaagtctcat	3007
aaatggatat aaaaaatagt gtgtaagcaa cagttatccc tacaaaaact tttgtggggt	3067
agatcgatcc agaggttgtt tccagactct tgcttaaaaa aaatgttttt tctaaataag	3127
tttgaaagaa atgttatatg atgaaaatat gaagaaaaac atatcaatat taaaaataat	3187
aaagtaatca aagtaaacga aataacaata ggaataatac tcataaatga aaatttagtg	3247
gcttttcgtt aacataatct tagtttattc attgtttctt taatttccct tcttattttt	3307
tttgaaatta ctaatgcag att ttt gga tcc tta gaa gca tct agt aaa att Ile Phe Gly Ser Leu Glu Ala Ser Ser Lys Ile 140 145	3359
tca gac tac aaa gat aga agg ctt tgg att gct ttt gat agt gtt caa Ser Asp Tyr Lys Asp Arg Arg Leu Trp Ile Ala Phe Asp Ser Val Gln 150 155 160	3407
aat tta gtt gtt gga gga gga act atc aat ggc aat gga caa gta Asn Leu Val Val Gly Gly Gly Gly Thr Ile Asn Gly Asn Gly Gln Val 165 170 175 180	3455
tgg tgg cca agt tct tgc aaa ata aat aaa tca ctg gtaattttat Trp Trp Pro Ser Ser Cys Lys Ile Asn Lys Ser Leu 185 190	3501

aaccttgctt ataagtttta cgctatgttg ctcgaattct ttaaacttgt tctaaagata	3561
ttatatattt gaaggaggtg tcacaaatgc atcacatttt tagagattcc gaccaatatt	3621
agttttatgt aatctaattt tcagagcatc tttgccttgt actgatcatt gttacccttt	3681
ttttcttcat gcag cca tgc agg gat gca cca acg gtacgttaat tgcatttgat Pro Cys Arg Asp Ala Pro Thr 195	3736
ttgataaaaa aaaaaagcct aaaatatatt tgaattttaa ttgaaaggtt ataataattc	3796 .
ttaactttgg gcaggaccta ttaccccttg cactatttaa tagtgtattt taaagatata	3856
aaagtgttta gttgaaacaa aaatttagat attcaaaaac tatttgaaaa ttactataaa	3916
ttgcaatttt tttgcatatc aatatgatta aaaaatatta gttaaagttc ttatgatttg	3976
attctaaaaa taaaaatcat gacaaacaat agtagacgga gaaagtatat aacaatacct	4036
cttcaagtag aatcgatttg tacacacacc tcaaaaccta cgttttcttc gatttatatt	4096
tcctatttct tttaatagta atcaaaggct attagttctg tcaaaatcta tacattggaa	4156
actctatctt tgacgcctcg tacattcgag atcgttgaac aatggatgaa tgattattta	4216
actttgtatt taaatattaa aactaatatt gtttaatttt cag gcc tta acc ttc Ala Leu Thr Phe 200	4271
tgg aat tgc aaa aat ttg aaa gtg aat aat cta aag agt aaa aat gca Trp Asn Cys Lys Asn Leu Lys Val Asn Asn Leu Lys Ser Lys Asn Ala 205 210 215	4319
caa caa att cat atc aaa ttt gag tca tgc act aat gtt gta gct tca Gln Gln Ile His Ile Lys Phe Glu Ser Cys Thr Asn Val Val Ala Ser 220 235	4367
aat ttg atg atc aat gct tca gca aag agc cca aat act gat gga gtc Asn Leu Met Ile Asn Ala Ser Ala Lys Ser Pro Asn Thr Asp Gly Val 240 245 250	4415
cat gta tca aat act caa tat att caa ata tct gat act att att gga His Val Ser Asn Thr Gln Tyr Ile Gln Ile Ser Asp Thr Ile Ile Gly 255 260 265	4463
aca g gtttatttat ttaattttta tttatccaat ttaattagaa aaaaaaagga Thr	4517
gtatttttat ttgataacta aattattaat ttttaattt tttttatag gt gat ga	4574
tgt att tca att gtt tct gga tct caa aat gtg cag gcc aca aat att Cys Ile Ser Ile Val Ser Gly Ser Gln Asn Val Gln Ala Thr Asn Ile 275 280 285	4622

٠.

act tgt ggt cca ggt cat ggt ata ag gtactctatt ttacaaatat Thr Cys Gly Pro Gly His Gly Ile Ser 290 295	4668
acttgtttcc attttctcta tttcataaaa ggtagtatga tataataatt actttaaatc	4728
ctttaattaa tttattggca aattttttct cttgtcttta tggttaatga cttagcacaa	4788
taattagggc cgtttggatg ggcgaataaa agcagcttta aaaaagtact tttaaaagtg	4848
ttgaaactta tttttaaaat aagcagttat cggtttggat aaaagtgctg aagttgttat	4908
gtcaaacgtg aaaagggaaa aatggaagaa agaaatgtta gggttatatg ggttatttgt	4968
ataaaaatat taagcacaaa aagataaaaa tgtggtcaac ttaaaacaac ttataagcta	5028
ccctacccta ccccagcttt taacttttgg cttaaaataa gtttttttt ttaaaactta	5088
aaataagttg ttttgagtat tgccaaagag ctaaataatg caaaaaccag cttttaagtc	5148
agtttgacca gcttttaagc tgagccaaac aggctcttaa aatgtctgct tagatgtgct	5208
atatatattt gagctttttt tgaagtagta tattatcctt aagttcaaca taaaatacat	5268
gctttaacat agcacatata gttaatcaaa agacgaaatg atgaataatt ttgcgaattt	5328
gattattcac aagaaaaggg atagttcaaa gtgtacattt caatgaattg aagatatcat	5388
aaagactaaa attagaagaa tcaataattg agggatcaaa aatgttatta ccttattaaa	5448
atactattcc attttcatat taaattaact aattaagagt gttttataat ctaataaaac	5508
atgcaataat tattgacgaa atgtggtttt ggtacctata atctttctga atatttgctc	5568
tatttttct ctttttattt ttccatggat tac t att gga agc tta gga tct Ile Gly Ser Leu Gly Ser 300	5620
gga aat toa gaa got tat gtg tot aat gtt act gta aat gaa goo aaa Gly Asn Ser Glu Ala Tyr Val Ser Asn Val Thr Val Asn Glu Ala Lys 305 310 315	5668
att atc ggt gcc gaa aat gga gtt agg atc aag act tgg cag Ile Ile Gly Ala Glu Asn Gly Val Arg Ile Lys Thr Trp Gln 320 325 330	5710
gtaccetece eccecece eccecacag geceattitt ttaattitt ttaaattitt	5770
attcgaatat caatattaaa gattaatttg atttcatgtt tgaaatttat atttggataa	5830
agtatgtatt ttactagett tetatgttat atagaaaaaa aaatgtteag aactteagat	5890
tattgtactc gtactaagtg taaatgtgtt gctttgttta gaagtttggt ttatccagtt	5950
ttgggtcatg attaaaccaa acttataatg aaaaggggct gcaacggccg gcccactagt	6010

--

•

gctagtatca ataggaagat ctcacgtctg tttattcaga tggacgttct tggttgaatg	6070
ttaataatta taaatttaat taacatgtaa ttaagcatta tataaattaa tgtggtttaa	6130
taatgtag gga gga tot gga caa got ago aac ato aaa tit otg aat gtg Gly Gly Ser Gly Gln Ala Ser Asn Ile Lys Phe Leu Asn Val 335 340 345	6180
gaa atg caa gac gtt aag tat ccc ata att ata gac caa aac tat tgt Glu Met Gln Asp Val Lys Tyr Pro Ile Ile Ile Asp Gln Asn Tyr Cys 350 355 360	6228
gat cga gtt gaa cca tgt ata caa cag gtaatttttt attaacgaac Asp Arg Val Glu Pro Cys Ile Gln Gln 365 370	6275
aatttattat attttattac ttcttaaatc accttacatc attaaaactt tgagattctt	6335
ttcactagtt agtaactttt tgaatagatt tttagtaaat gatattcatt attcctttta	6395
tttttcttct aatttatgga tcttttggac tatggtctaa aaatcttgtt aaagtaaact	6455
gaatatcata agaaaaaatg ttagattata atctaaattt tttataaatt attagacgtt	6515
atctaatatt ttgtatgtaa gattgagaaa catatacata aaacattaga ttcaaattta	6575
ataatatcta aaatattgat tcaaatcaat catgactaca caaacgaata catgcagatt	6635
ctcaaacata tagatgaagt catttcaaaa cgaatcaaat atagtagagt atatccttaa	6695
aagagagcat ttgggtaaat aagtaaaaat cattaagtta taaaaaaaat tctaactcga	6755
tototoacga ttatttaato actttgttoo ag ttt toa goa gtt caa gtg aaa Phe Ser Ala Val Gln Val Lys 375	6808
aat gtg gtg tat gag aat atc aag ggc aca agt gca aca aag gtg gcc Asn Val Val Tyr Glu Asn Ile Lys Gly Thr Ser Ala Thr Lys Val Ala 380 385 390	6856
ata aaa ttt gat tgc agc aca aac ttt cca tgt gaa gga att ata atg Ile Lys Phe Asp Cys Ser Thr Asn Phe Pro Cys Glu Gly Ile Ile Met 395 400 405 410	6904
gag aat ata aat tta gta ggg gaa agt gga aaa cca tca gag gct acg Glu Asn Ile Asn Leu Val Gly Glu Ser Gly Lys Pro Ser Glu Ala Thr 415 420 425	6952
tgc aaa aat gtc cat ttt aac aat gct gaa cat gtt aca cca cac tgc Cys Lys Asn Val His Phe Asn Asn Ala Glu His Val Thr Pro His Cys 430 435 440	7000
act tca cta gaa att tca gag gat gaa gct ctt ttg tat aat tat Thr Ser Leu Glu Ile Ser Glu Asp Glu Ala Leu Leu Tyr Asn Tyr 445 450 455	7045
taatttatac tatagatett caatatatag cagatatgat atatcacaat aaacaaatet	7105

atatctatgt	attgaataat	tattattaat	atgtacggat	tgaagtttta	ataagactac	7165
tatgtatttc	tattttctag	tcaaaagttt	gacgattgta	ctttttaatg	tacaaaaata	7225
ataaaatggt	tatttatatg	atgtatatat	ccctttggta	tttcttgttg	aactataatg	7285
tcattattta	ataactatta	tctgtgcaat	gattgtattt	gttaatgata	cataatatat	7345
ctttcatcat	tgataataag	aataaaatat	tttacgtcta	ttactttgtg	aattatatgt	7405
agattttagt	ttttgtttta	tttttaatta	aaccgagtga	aatataaaga	g	7456

<210> 2

<211> 457

<212> PRT

<213> Lycopersicon esculentum

<400> 2

Met Val Ile Gln Arg Asn Ser Ile Leu Leu Leu Ile Ile Ile Phe Ala 1 5 10 15

Ser Ser Ile Ser Thr Cys Arg Ser Asn Val Ile Asp Asp Asn Leu Phe 20 25 30

Lys Gln Val Tyr Asp Asn Ile Leu Glu Gln Glu Phe Ala His Asp Phe 35 40 45

Gln Ala Tyr Leu Ser Tyr Leu Ser Lys Asn Ile Glu Ser Asn Asn Asn 50 55 60

Ile Asp Lys Val Asp Lys Asn Gly Ile Lys Val Ile Asn Val Leu Ser 70 75 80

Phe Gly Ala Lys Gly Asp Gly Lys Thr Tyr Asp Asn Ile Ala Phe Glu 85 90 95

Gln Ala Trp Asn Glu Ala Cys Ser Ser Arg Thr Pro Val Gln Phe Val
100 105 110

Val Pro Lys Asn Lys Asn Tyr Leu Leu Lys Gln Ile Thr Phe Ser Gly 115 120 125

Pro Cys Arg Ser Ser Ile Ser Val Lys Ile Phe Gly Ser Leu Glu Ala 130 135 140

145	261	пĵз	116	361	150	171	273	იახ	n. g	155	neu	115	116	niu	160
Asp	Ser	Val	Gln	Asn 165	Leu	Val	Val	Gly	Gly 170	Gly	Gly	Thr	Ile	Asn 175	Gly
Asn	Gly	Gln	Val 180	Trp	Trp	Pro	Ser	Ser 185	Cys	Lys	Ile	Asn	Lys 190	Ser	Leu
Pro	Cys	Arg 195	Asp	Ala	Pro	Thr	Ala 200	Leu	Thr	Phe	Trp	Asn 205	Суѕ	Lys	Asn
Leu	Lys 210	Val	Asn	Asn	Leu	Lys 215	Ser	Lys	Asn	Ala	Gln 220	Gln	Ile	His	Ile
Lys 225	Phe	Glu	Ser	Cys	Thr 230	Asn	Val	Val	Ala	Ser 235	Asn	Leu	Met	Ile	Asn 240
Ala	Ser	Ala	Lys	Ser 245	Pro	Asn	Thr	Asp	Gly 250	Val	His	Val	Ser	Asn 255	Thr
Gln	Tyr	Ile	Gln 260	Ile	Ser	Asp	Thr	Ile 265	Ile	Gly	Thr	Gly	Asp 270	Asp	Cys
Ile	Ser	Ile 275	Val	Ser	Gly	Ser	Gln 280	Asn	Val	Gln	Ala	Thr 285	Asn	Ile	Thr
Cys	Gly 290	Pro	Gly	His	Gly	Ile 295	Ser	Ile	Gly	Ser	Leu 300	Gly	Ser	Gly	Asn
Ser 305	Glu	Ala	Tyr	Val	Ser 310	Asn	Val	Thr	Val	Asn 315	Glu	Ala	Lys	Ile	Ile 320
Gly	Ala	Glu	Asn	Gly 325	Val	Arg	Ile	Lys	Thr 330	Trp	Gln	Gly	Gly	Ser 335	Gly
Gln	Ala	Ser	Asn 340	Ile	Lys	Phe	Leu	Asn 345	Val	Glu	Met	Gln	Asp 350	Val	Lys
Tyr	Pro	Ile 355	Ile	Ile	Asp	Gln	Asn 360	Tyr	Суѕ	Asp	Arg	Val 365	Glu	Pro	Cys
Ile	Gln	Gln	Phe	Ser	Ala	Val	Gln	Val	Lys	Asn	Val	Val	Tyr	Glu	Asn

370 375 380

11e 385	Lys	Gly	Thr	Ser	Ala 390	Thr	Lys	Val	Ala	Ile 395	Lys	Phe	Asp	Суѕ	Ser 400		
Thr	Asn	Phe	Pro	Cys 405	Glu	Gly	Ile	Ile	Met 410	Glu	Asn	Ile	Asn	Leu 415	Val		
Gly	Glu	Ser	Gly 420	Lys	Pro	Ser	Glu	Ala 425	Thr	Суѕ	Lys	Asn	Val 430	His	Phe		
Asn	Asn	Ala 435	Glu	His	Val	Thr	Pro 440	His	Суѕ	Thr	Ser	Leu 445	Glu	Ile	Ser		
Glu	Asp 450	Glu	Ala	Leu	Leu	Tyr 455	Asn	Tyr									
	L> :		pers:	icon	escı	ılen	cum										
<400 ttga		ggg a	agaaq	gaca	ag co	caga											25
<211 <212	<210> 4 <211> 28 <212> DNA <213> Lycopersicon esculentum																
<400 ccaa		4 tat q	gaaca	aacc	tc ad	cacai	tgc										28
<210 <211 <212 <213	L> : 2> 1	5 26 DNA Lycop	pers:	icon	esci	ulen	cum										
<400> 5 tgtggggtag atcgatccag aggttg 26								26									
	L> : 2> :		pers	icon	esci	ulen	tum										
<400 acg		6 gta (	catt	cgag	at c	gttg											25

	7 . 27	
<212>	DNA	
	Lycopersicon esculentum	
<400>	7	
tcacaag	yaaa agggatagtt caaagtg	27
<210>	8	
<211>	26	
<212>	DNA	
<213>	Lycopersicon esculentum	
<400>	8	
tgaagto	att tcaaaacgaa tcaaat	26
<210>	9	
<211>		
<212>		
<213>	Lycopersicon esculentum	
	9	
ttctcct	tct cattattatt tttgcttcat ca	32
	4.0	
<210>		
<212>		
<213>	Lycopersicon esculentum	
400	4.0	
<400>	10	2.0
ctggaat	ttgc aaaaatttga aagtgaataa	30
<210>	11	
<211>	26	
<211>		
<213>	DNA	
<213>	Lycopersicon esculentum	
<400>	11	
		26
ccyaga	cggg agaagacaag ccagac	_
<210>	12	
<211>	27	
<211>		
	Lycopersicon esculentum	
~4137	Pleoberateou eacatemm	
<400>	12	•
	ttc gtactacata atcttag	27
agegge	see year acceptage	

-211-	20	
	28	
<212>	DNA	
<213>	Lycopersicon esculentum	
12137	nycoperation. Cocaronomic	
<400>	13	
catgcaa	taa ttattgacga aatgtggt	28
<210>	14	
<211>	25	
<212>		
<213>	Lycopersicon esculentum	
<400>	14	
		25
ccgagac	ggg agaagacaag ccaga	د 2
<210>	15	
	25	
<212>	DNA	
<213>	Lycopersicon esculentum	
.400-	15	
	15	
tgagaco	gga gaagacaagc cagac	25
-210-	16	
	16	
<211>	32	
<212>	DNA	
	Lycopersicon esculentum	
(213)	Lycopersicon escurencum	
<400>	16	
ttctcct	tct cattattatt tttgcttcat ca	32
<210>	17	
<211>	30	
<212>		
<213>	Lycopersicon esculentum	
<400>	17	
	tgc aaaaatttga aagtgaataa	30
Ciggaal	tige adadatitya dagiyadtad	-
<210>	18	
<211>	33	
<212>		
<213>	Lycopersicon esculentum	
-		
-100-	10	
	18	2 7
ttgacga	aaat gtggttttgg tacctataat ctt	33
	·	
-210:	10	
<210>	19	
<211>	30	
<212>	DNA	
	Lycopersicon esculentum	
~4137	pleoberateou esegreuemu	

<400>		
cacaaac	gaa tacatgcaga ttctcaaaca	30
<210>	20	
<211>	28	
<212>	DNA	
	Lycopersicon esculentum	
<400>	20	
	atat gaacaacctc acacatgc	28
<210>	21	
<211>	28	
	DNA	
<213>	Lycopersicon esculentum	
<400>	21	
atcttca	aatc taccatattg aaatattg	28
<210>	22	
<211>	26	÷
<212>	DNA	
<213>	Lycopersicon esculentum	
<400>	22	
	iggt agtgtttctt atcgtg	26
cacacci	tage agegeees accard	
<210>	23	
<211>	27	
<212>		
<213>	Lycopersicon esculentum	
<400>	23	
agtggc	tttc gtactacata atcttag	27
<210>	24	
<211>	32	
<212>	DNA	
	Lycopersicon esculentum	
<400>	24	
	acga aatgatgaat aattttgcga at	32
<210>	25	
<211>		
<212>		
<213>	Lycopersicon esculentum	
<400>	25	3.0
cacaaa	cgaa tacatgcaga ttctcaaaca	30

.:

.

.

<210><211><212><213>	26 26 DNA Lycopersicon esculentum	
<400>	26 gtat atccttaaaa gagagc	26
	27 25 DNA	
<400>	Lycopersicon esculentum  27 ctga cattcgagat cgttg	25
<210>	28	-
<211> <212>	27 DNA Lycopersicon esculentum	
<400> ccatgga	28 aaaa tagcttttcc tcgctta	27
<210> <211>	29 30	
<213>	DNA Lycopersicon esculentum	
<400>	29 gata attecteact aateegetaa	30
<210><211><212><212>	30 25 DNA Lycopersicon esculentum	
<400>	·	25
<210> <211>	31 25	
<213>	DNA Lycopersicon esculentum	
<400> ctgctt	31 ttat tcgcccatcc aaacg	25

<211><212>	30 DNA	
<213>	Lycopersicon esculentum	
<400>	32	
gaatcto	aaa gttttaatga tgtaaggtga	30
<210>	33	
<211>	29	
<212>		
<213>	Lycopersicon esculentum	
<400>	33	
ttataca	aaaa gagcttcatc ctctgaaat	29
<210>		
<211>	31	
	DNA	
<213>	Lycopersicon esculentum	
<400>	34	
cctgttg	tat acatggttca actcgatcac a	31
<210>	35	
<211>	31	
<212>		
<213>	Lycopersicon esculentum	
<400>	35	
cctctga	aaat ttctagtgaa gtgcagtgtg g	31
<210>	36	
<211>	28	
<212>	DNA	
<213>	Lycopersicon esculentum	
<400>	36	
	gaaa atgactttcc tcgcttac	28
	•	
<210>	37	
<211>	31	
<212>	DNA	
<213>	Lycopersicon esculentum	
<400>	37	
	gate tgeatggace tgaaaaggtg a	31
3 -		
<210>	38	
<211>	29	
<212>		
	Lycopersicon esculentum	

	<400>		
	aagtaat	tatt tgtggcctgc acatttgag	29
	-		
	-2105	20	
	<210>		
	<211>		
	<212>		
	<213>	Lycopersicon esculentum	
	<400>	39	
			35
	CCCCCC.	det gegetanger accuracy angue	
•	212	40	
	<210>		
	<211>		
	<212>	DNA	
	<213>	Lycopersicon esculentum	
	<400>	40	
		agtc caaaagatcc ataaattaga agaaaa	36
	gaccac	4900 0444494000 4044400494 494444	
	212		
	<210>		
	<211>		•
	<212>	DNA	
	<213>	Lycopersicon esculentum	
	<400>	41	
		tata gttcaacaag aaataccaaa gggata	36
	cgacac	cata generating additional aggree	
	<210>		
	<211>		
	<212>	DNA	
	<213>	Lycopersicon esculentum	
	<400>	42	
		gaaa atagetttee tegettaa	28.
	accatg	gada acagerette tegeretaa	
•			
•	<210>		
	<211>		
	<212>	DNA	
	<213>	Lycopersicon esculentum	
	<400>	43	
		ggta atagteetge ceaaa	25
	caaagg	3350 2023000030 00000	
	<210>		
	<211>		•
	<212>	DNA	
		Lycopersicon esculentum	
		• •	
	<400>	44	
			26
	CLACEE	ttat tacgcccatc caaacg	- <del>-</del>

```
<210> 45
 <211> 34
 <212> DNA
 <213> Lycopersicon esculentum
 <400> 45
                                                                       34
 aagtgtaaat gtgttgcttt gtttagaagt ttgg
 <210> 46
 <211> 36
 <212> DNA
 <213> Lycopersicon esculentum
 <400> 46
                                                                       36
 tgaaaagaat ctcaaagttt taatgatgta aggtga
 <210> 47
 <211> 7456
 <212> DNA
 <213> Lycopersicon esculentum
 <220>
 <221> CDS
 <222> (1479)..(1757)
 <223>
 <220>
 <221> CDS
 <222> (2416)..(2547)
 <223>
 <220>
 <221> CDS
 <222> (3327)..(3491)
 <223>
  <220>
  <221> CDS
  <222> (3696)..(3716)
  <223>
  <220>
  <221> CDS
<222> (4260)..(4467)
  <223>
. <220>
  <221> CDS
```

```
<222> (4567)..(4648)
<223>
<220>
<221> CDS
<222>
      (5602)..(5710)
<223>
<220>
<221> CDS
<222>
      (6139)..(6255)
<223>
<220>
<221>
     CDS
<222>
      (6788)..(7045)
<223>
<400> 47
aagcttctta aaaaggcaaa ttgattaatt tgaagtcaaa ataattaatt ataacaatgg
taaagcacct taagaaacca tagtttgaaa ggttaccaat gcgctatata ttaatcaact
tgataatata aaaaaaattt caattcgaaa agggcctaaa atattctcaa agtattcgaa
atggtacaaa actaccatcc gtccacctat tgactccaaa ataaaattat tatccacctt
tgagtttaaa attgactact tatataacaa ttctaaattt aaactatttt aatactttta
accaactacc aactcattaa tcattaaatc ccacccaaat tctactatca aaattgtcct
aaacactact aaaacaagac gaaattgttc gagtccgaat cgaagcacca atctaattta
```

ggttgagccg catatttagg aggacacttt caatagtatt tttttcaagc atgaatttga

aatttaagat taatggtaaa gaagtagtac acccgaatta attcatgcct tttttaaata

taattatata aatatttatg atttgtttta aatattaaaa cttgaatata ttatttttaa

aaaaattatc tattaagtac catcacataa ttgagacgag gaataattaa gatgaacata

ttataacaaa tatttgagcg ccatgtattt taaaaaaatat taaataagtt tgaatttaaa

accettagat aaatgetcaa ttttgaaccc aaaagtegat gagaaggeta ttttagagcc

aataggggga tgagaaggat attttgaagc caatatgtga tggatggagg ataattttgt

atcatttcta atactttaaa gatattttag gtcattttcc cttctttagt ttatagacta

60

120

180

240

300

360

420

480

540

600

660

720

780

840

900

960

1020

tagtgttagt tcatcgaata tcatctatta tttccgtctt aaattatttt ttatttata	1080
aatttttaaa aaataaatta ttttttccat ttaactttga ttgtaattaa tttttaaaaa	1140
ttaccaacat ataaataaaa ttaatattta acaaagaatt gtaacataat attttttaa	1200
ttattcaaaa taaatatttt taaacatcat ataaaagaaa tacgacaaaa aaattgagac	1260
gggagaagac aagccagaca aaaatgtcca agaaactctt tcgtctaaat atctctcatc	1320
caaactaata taatacccat tacaattaac catattgacc aactcaaacc ccttaaaatc	1380
tataaataga caaacccttc ccatacctct tatcataaaa aaaataataa tctttttcaa	1440
tagacaagtt taaaaaccat accatataac aatatatc atg gtt atc caa agg aat Met Val Ile Gln Arg Asn 1 5	1496
agt att ctc ctt ctc att att ttt gct tca tca att tca act tgt Ser Ile Leu Leu Ile Ile Ile Phe Ala Ser Ser Ile Ser Thr Cys 10 15 20	1544
aga agc aat gtt att gat gac aat tta ttc aaa caa gtt tat gat aat Arg Ser Asn Val Ile Asp Asp Asn Leu Phe Lys Gln Val Tyr Asp Asn 25 30 35	1592
att ctt gaa caa gaa ttt gct cat gat ttt caa gct tat ctt tct tat Ile Leu Glu Gln Glu Phe Ala His Asp Phe Gln Ala Tyr Leu Ser Tyr 40 45 50	1640
ttg agc aaa aat att gaa agc aac aat aat att gac aag gtt gat aaa Leu Ser Lys Asn Ile Glu Ser Asn Asn Asn Ile Asp Lys Val Asp Lys 55 60 65 70	1688
aat ggg att aaa gtg att aat gta ctt agc ttt gga gct aag ggt gat Asn Gly Ile Lys Val Ile Asn Val Leu Ser Phe Gly Ala Lys Gly Asp 75 80 85	1736
gga aaa aca tat gat aat att gtaagtattt aaatattgga atatatttgt Gly Lys Thr Tyr Asp Asn Ile 90	1787
ggggatgaaa atgatagaga atataagaat tatttggaag gatgaaaagt tatattttat	1847
aaagtagaaa attattttct cgtttttagt attaaggtga aaatgagttt ctcgttaagc	1907
gaggaaaagc tattttccat ggtaactgta ttttttttt acttttaata acgtcatagt	1967
atttgctata ctcaagaata agacacttat tattgatgat ttagtgctcg aaaagaaatt	2027
gatagtaatt ttgcttaata taactatcaa tttcttatat gtatattttt caaccaaaat	2087
aacaaagcgt aatccaataa gtgggcctct agaataaaga gtaagttcta ttcaattctt	2147
aaccttattt aattttagtg gaaacctcga caaaaacgaa caaacgtatt caaactttta	2207
tattcggaat tcgagaccaa ccatatgaac aacctcacac atgcatatag tcctaatata	2267

tataattttt ctaaaaaata tottoaatot accatattga aatattgaaa aatgactttt	2327
atcctatcga acacataatc aagagtttct tttaagaatt taccactaca tttggtatgt	2387
ttcttatcgt gttaaaatta tctttcag gca ttt gag caa gca tgg aat gaa Ala Phe Glu Gln Ala Trp Asn Glu 95 100	2439
gca tgt tca tct aga aca cct gtt caa ttt gtg gtt cct aaa aac aag Ala Cys Ser Ser Arg Thr Pro Val Gln Phe Val Val Pro Lys Asn Lys 105 110 115	2487
aat tat ctt ctc aag caa atc acc ttt tca ggt cca tgc aga tct tct Asn Tyr Leu Leu Lys Gln Ile Thr Phe Ser Gly Pro Cys Arg Ser Ser 120 125 130	2535
att tca gta aag gttagcatat tgattattta tatcctcttt gttagcaata Ile Ser Val Lys 135	2587
tattatctgg tttatgacaa aatttaagaa agtaatcaaa gatagataaa caatgaattt	2647
togtoactaa titagoggat tagtgaggaa ttatoaaaat gitatgitag otatgagoaa	2707
cttagctatg aattagctag tgaagaagtt tgatgctaat tctattttt ttttgtagag	2767
taaagatatt tgaaacacat gtattaatta ttaattatgt cttaattaat atgtcaatgg	2827
atagttcaaa ctaaagaact gtcaaaagaa aataagaaag aaatatttat ttttaaaata	2887
aattaaaaag aaaaatatga gaaataaatt caaagcgaga aggtattaca taatctatgg	2947
ggataaaagg atattatata tgtaagaaaa cagcactaca catatctaat aaagtctcat	3007
aaatggatat aaaaaatagt gtgtaagcaa cagttatccc tacaaaaact tttgtggggt	3067
agatcgatcc agaggttgtt tccagactct tgcttaaaaa aaatgttttt tctaaataag	3127
tttgaaagaa atgttatatg atgaaaatat gaagaaaaac atatcaatat taaaaataat	3187
aaagtaatca aagtaaacga aataacaata ggaataatac tcataaatga aaatttagtg	3247
gettttegtt aacataatet tagtttatte attgtttett taattteeet tettattttt	3307
tttgaaatta ctaatgcag att ttt gga tcc tta gaa gca tct agt aaa att Ile Phe Gly Ser Leu Glu Ala Ser Ser Lys Ile 140 145	3359
tca gac tac aaa gat aga agg ctt tgg att gct ttt gat agt gtt caa Ser Asp Tyr Lys Asp Arg Arg Leu Trp Ile Ala Phe Asp Ser Val Gln 150 155 . 160	3407
aat tta gtt gtt gga gga gga act atc aat ggc aat aga caa gta Asn Leu Val Val Gly Gly Gly Gly Thr Ile Asn Gly Asn Arg Gln Val 165 170 175 180	3455

tgg tgg cca agt tct tgc aaa ata aat aaa tca ctg gtaattttat Trp Trp Pro Ser Ser Cys Lys Ile Asn Lys Ser Leu 185 190	3501
aaccttgctt ataagtttta cgctatgttg ctcgaattct ttaaacttgt tctaaagata	3561
ttatatattt gaaggaggtg tcacaaatgc atcacatttt tagagattcc gaccaatatt	3621
agttttatgt aatctaattt tcagagcatc tttgccttgt actgatcatt gttacccttt	3681
ttttcttcat gcag cca tgc agg gat gca cca acg gtacgttaat tgcatttgat Pro Cys Arg Asp Ala Pro Thr 195	3736
ttgataaaaa aaaaaagcct aaaatatatt tgaattttaa ttgaaaggtt ataataattc	3796
ttaactttgg gcaggaccta ttaccccttg cactatttaa tagtgtattt taaagatata	3856
aaagtgttta gttgaaacaa aaatttagat attcaaaaac tatttgaaaa ttactataaa	3916
ttgcaatttt tttgcatatc aatatgatta aaaaatatta gttaaagttc ttatgatttg	3976
attctaaaaa taaaaatcat gacaaacaat agtagacgga gaaagtatat aacaatacct	4036
cttcaagtag aatcgatttg tacacacacc tcaaaaccta cgttttcttc gatttatatt	4096
tectatttet tttaatagta ateaaagget attagttetg teaaaateta tacattggaa	4156
actctatctt tgacgcctcg tacattcgag atcgttgaac aatggatgaa tgattattta	4216
actttgtatt taaatattaa aactaatatt gtttaatttt cag gcc tta acc ttc Ala Leu Thr Phe 200	4271
tgg aat tgc aaa aat ttg aaa gtg aat aat cta aag agt aaa aat gca Trp Asn Cys Lys Asn Leu Lys Val Asn Asn Leu Lys Ser Lys Asn Ala 205 210 215	4319
caa caa att cat atc aaa ttt gag tca tgc act aat gtt gta gct tca Gln Gln Ile His Ile Lys Phe Glu Ser Cys Thr Asn Val Val Ala Ser 220 225 230 235	4367
aat ttg atg atc aat gct tca gca aag agc cca aat act gat gga gtc Asn Leu Met Ile Asn Ala Ser Ala Lys Ser Pro Asn Thr Asp Gly Val 240 245 250	4415
cat gta tca aat act caa tat att caa ata tct gat act att att gga His Val Ser Asn Thr Gln Tyr Ile Gln Ile Ser Asp Thr Ile Ile Gly 255 260 265	4463
aca g gtttatttat ttaattttta tttatccaat ttaattagaa aaaaaaagga Thr	4517
gtatttttat ttgataacta aattattaat ttttaatttt tttttatag gt gat ga	4574

tgt att tca att gtt tct gga tct caa aat gtg cag gcc aca aat att Cys Ile Ser Ile Val Ser Gly Ser Gln Asn Val Gln Ala Thr Asn Ile 275 280 285	4622
act tgt ggt cca ggt cat ggt ata ag gtactctatt ttacaaatat Thr Cys Gly Pro Gly His Gly Ile Ser 290 295	4668
actigitice attiteteta titeataaaa ggiagtaiga tataataati actitaaate	4728
ctttaattaa tttattggca aattttttct cttgtcttta tggttaatga cttagcacaa	4788
taattagggc cgtttggatg ggcgaataaa agcagcttta aaaaagtact tttaaaagtg	4848
ttgaaactta tttttaaaat aagcagttat cggtttggat aaaagtgctg aagttgttat	4908
gtcaaacgtg aaaagggaaa aatggaagaa agaaatgtta gggttatatg ggttatttgt	4968
ataaaaatat taagcacaaa aagataaaaa tgtggtcaac ttaaaaacaac ttataagcta	5028
ccctacccta ccccagcttt taacttttgg cttaaaataa gtttttttt ttaaaactta	5088
aaataagttg ttttgagtat tgccaaagag ctaaataatg caaaaaccag cttttaagtc	5148
agtttgacca gcttttaagc tgagccaaac aggctcttaa aatgtctgct tagatgtgct	5208
atatatattt gagetttttt tgaagtagta tattateett aagtteaaca taaaataeat	5268
gctttaacat agcacatata gttaatcaaa agacgaaatg atgaataatt ttgcgaattt	5328
gattattcac aagaaaaggg atagttcaaa gtgtacattt caatgaattg aagatatcat	5388
aaagactaaa attagaagaa tcaataattg agggatcaaa aatgttatta ccttattaaa	5448
atactattcc attttcatat taaattaact aattaagagt gttttataat ctaataaaac	5508
atgcaataat tattgacgaa atgtggtttt ggtacctata atctttctga atatttgctc	5568
tatttttct ctttttattt ttccatggat tac t att gga agc tta gga tct Ile Gly Ser Leu Gly Ser 300	5620
gga aat tca gaa gct tat gtg tct aat gtt act gta aat gaa gcc aaa Gly Asn Ser Glu Ala Tyr Val Ser Asn Val Thr Val Asn Glu Ala Lys 305 310 315	5668
att atc ggt gcc gaa aat gga gtt agg atc aag act tgg cag Ile Ile Gly Ala Glu Asn Gly Val Arg Ile Lys Thr Trp Gln 320 325 330	5710
gtaccctccc cccccccc cccccacag gcccattttt ttaattttt ttaaattttt	5770
attcgaatat caatattaaa gattaatttg atttcatgtt tgaaatttat atttggataa	5830
agtatgtatt ttactagctt tctatgttat atagaaaaaa aaatgttcag aacttcagat	5890

:

tattgtactc gtactaagtg taaatgtgtt gctttgttta gaagtttggt ttatccagtt	5950
ttgggtcatg attaaaccaa acttataatg aaaaggggct gcaacggccg gcccactagt	6010
gctagtatca ataggaagat ctcacgtctg tttattcaga tggacgttct tggttgaatg	6070
ttaataatta taaatttaat taacatgtaa ttaagcatta tataaattaa tgtggtttaa	6130
taatgtag gga gga tct gga caa gct agc aac atc aaa ttt ctg aat gtg Gly Gly Ser Gly Gln Ala Ser Asn Ile Lys Phe Leu Asn Val 335 340 345	6180
gaa atg caa gac gtt aag tat ccc ata att ata gac caa aac tat tgt Glu Met Gln Asp Val Lys Tyr Pro Ile Ile Ile Asp Gln Asn Tyr Cys 350 355 360	6228
gat cga gtt gaa cca tgt ata caa cag gtaatttttt attaacgaac Asp Arg Val Glu Pro Cys Ile Gln Gln 365 370	6275
aatttattat attttattac ttcttaaatc accttacatc attaaaactt tgagattctt	6335
ttcactagtt agtaactttt tgaatagatt tttagtaaat gatattcatt attcctttta	6395
tttttttttt aatttatgga tcttttggac tatggtctaa aaatcttgtt aaagtaaact	6455
gaatatcata agaaaaaatg ttagattata atctaaattt tttataaatt attagacgtt	6515
atctaatatt ttgtatgtaa gattgagaaa catatacata aaacattaga ttcaaattta	6575
ataatatcta aaatattgat tcaaatcaat catgactaca caaacgaata catgcagatt	6635
ctcaaacata tagatgaagt catttcaaaa cgaatcaaat atagtagagt atatccttaa	6695
aagagagcat ttgggtaaat aagtaaaaat cattaagtta taaaaaaaat tctaactcga	6755
tototoacga ttatttaato actttgttoo ag ttt toa goa gtt caa gtg aaa Phe Ser Ala Val Gln Val Lys 375	6808
aat gtg gtg tat gag aat atc aag ggc aca agt gca aca aag gtg gcc Asn Val Val Tyr Glu Asn Ile Lys Gly Thr Ser Ala Thr Lys Val Ala 380 385 390	6856
ata aaa ttt gat tgc agc aca aac ttt cca tgt gaa gga att ata atg Ile Lys Phe Asp Cys Ser Thr Asn Phe Pro Cys Glu Gly Ile Ile Met 395 400 405 410	6904
gag aat ata aat tta gta ggg gaa agt gga aaa cca tca gag gct acg Glu Asn Ile Asn Leu Val Gly Glu Ser Gly Lys Pro Ser Glu Ala Thr 415 420 425	6952
tgc aaa aat gtc cat ttt aac aat gct gaa cat gtt aca cca cac tgc Cys Lys Asn Val His Phe Asn Asn Ala Glu His Val Thr Pro His Cys 430 435 440	7000
act tca cta gaa att tca gag gat gaa gct ctt ttg tat aat tat	7045

Thr	Ser	Leu	Glu	Ile	Ser	Glu	Asp	Glu	Ala	Leu	Leu	Tyr	Asn	Tyr
		445					450					455		

taatttatac	tatagatctt	caatatatag	cagatatgat	atatcacaat	aaacaaatct	7105
atatctatgt	attgaataat	tattattaat	atgtacggat	tgaagtttta	ataagactac	7165
tatgtatttc	tattttctag	tcaaaagttt	gacgattgta	ctttttaatg	tacaaaaata	7225
ataaaatggt	tatttatatg	atgtatatat	ccctttggta	tttcttgttg	aactataatg	7285
tcattattta	ataactatta	tctgtgcaat	gattgtattt	gttaatgata	cataatatat	7345
ctttcatcat	tgataataag	aataaaatat	tttacgtcta	ttactttgtg	aattatatgt	7,405
agattttagt	ttttgtttta	tttttaatta	aaccgagtga	aatataaaga	g	7456

<210> 48

<211> 457 <212> PRT

<213> Lycopersicon esculentum

<400> 48

Met Val Ile Gln Arg Asn Ser Ile Leu Leu Leu Ile Ile Ile Phe Ala

Ser Ser Ile Ser Thr Cys Arg Ser Asn Val Ile Asp Asp Asn Leu Phe 20

Lys Gln Val Tyr Asp Asn Ile Leu Glu Gln Glu Phe Ala His Asp Phe 40 45 35

Gln Ala Tyr Leu Ser Tyr Leu Ser Lys Asn Ile Glu Ser Asn Asn Asn 55 50

Ile Asp Lys Val Asp Lys Asn Gly Ile Lys Val Ile Asn Val Leu Ser 70 75 80 65

Phe Gly Ala Lys Gly Asp Gly Lys Thr Tyr Asp Asn Ile Ala Phe Glu 85 90 95

Gln Ala Trp Asn Glu Ala Cys Ser Ser Arg Thr Pro Val Gln Phe Val 110 105

Val Pro Lys Asn Lys Asn Tyr Leu Leu Lys Gln Ile Thr Phe Ser Gly 120 115

130	ALG	261	ser	11e	135	Val	Lys	Ile	Phe	Gly 140	Ser	Leu	Glu	Ala
Ser	Lys	Ile	Ser	Asp 150	Tyr	Lys	Asp	Arg	а ј 155	Leu	Trp	Ile	Ala	Phe 160
Ser	Val	Gln	Asn 165	Leu	Val	Val	Gly	Gly 170	Gly	Gly	Thr	Ile	Asn 175	Gly
Arg	Gln	Val 180	Trp	Trp	Pro	Ser	Ser 185	Cys	Lys	Ile	Asn	Lys 190	Ser	Leu
Cys	Arg 195	Asp	Ala	Pro	Thr	Ala 200	Leu	Thr	Phe	Trp	Asn 205	Cys	Lys	Asn
Lys 210	Val	Asn	Asn	Leu	Lys 215	Ser	Lys	Asn	Ala	Gln 220	Gln	Ile	His	Ile
Phe	Glu	Ser	Cys	Thr 230	Asn	Val	Val	Ala	Ser 235	Asn	Leu	Met	Ile	Asn 240
Ser	Ala	Lys	Ser 245	Pro	Asn	Thr	Asp	Gly 250	Val	His	Val	Ser	Asn 255	Thr
Tyr	Ile	Gln 260	Ile	Ser	Asp	Thr	Ile 265	Ile	Gly	Thr	Gly	Asp 270	Asp	Cys
Ser	Ile 275	Val	Ser	Gly	Ser	Gln 280	Asn	Val	Gln	Ala	Thr 285	Asn	Ile	Thr
Gly 290	Pro	Gly	His	Gly	Ile 295	Ser	Ile	Gly	Ser	Leu 300	Gly	Ser	Gly	Asn
Glu	Ala	Tyr	Val	Ser 310	Asn	Val	Thr	Val	Asn 315	Glu	Ala	Lys	Ile	Ile 320
Ala	Glu	Asn	Gly 325	Val	Arg	Ile	Lys	Thr 330	Trp	Gln	Gly	Gly	Ser 335	Gly
Ala	Ser	Asn 340	Ile	Lys	Phe	Leu	Asn 345	Val	Glu	Met	Gln	Asp 350	Val	Lys
	Ser Ser Arg Cys Lys 210 Phe Ser Tyr Ser Gly 290 Glu Ala	Ser Lys Ser Val Arg Gln Cys Arg 195 Lys Val 210 Phe Glu Ser Ala Tyr Ile Ser Ile 275 Gly Pro 290 Glu Ala Ala Glu	Ser Lys Ile Ser Val Gln Arg Gln Val 180 Cys Arg Asp 195 Lys Val Asn 210 Phe Glu Ser Ser Ala Lys Tyr Ile Gln 260 Ser Ile Val 275 Gly Pro Gly 290 Glu Ala Tyr Ala Glu Asn	Ser Lys Ile Ser Ser Val Gln Asn 165 Arg Gln Val Trp 180 Cys Arg Asp Ala 195 Val Asn Asn 210 Phe Glu Ser Cys Ser Ala Lys Ser 245 Tyr Ile Gln Ile 260 Ser Ile Val Ser 275 Gly Pro Gly His 290 Glu Ala Tyr Val Ala Glu Asn Gly 325 Ala Ser Asn Ile	Ser Lys Ile Ser Asponson Ser Val Gln Asn Leu 165 Arg Gln Val Trp Trp 180 Cys Arg Asp Ala Pro 195 Lys Val Asn Asn Leu 210 Phe Glu Ser Cys Thr 230 Ser Ala Lys Ser Pro 245 Tyr Ile Gln Ile Ser Cys Thr 260 Ser Ile Val Ser Gly 275 Gly Pro Gly His Gly 290 Glu Ala Tyr Val Ser 310 Ala Glu Asn Gly Val 325 Ala Ser Asn Ile Lys	130       135         Ser Lys Ile Ser Asp Tyr 150         Ser Val Gln Asn Leu Val 165         Arg Gln Val Trp Trp Pro 180         Cys Arg Asp Ala Pro Thr 195         Phe Glu Ser Cys Thr Asn 230         Ser Ala Lys Ser Pro Asn 245         Tyr Ile Gln Ile Ser Asp 260         Ser 11e Val Ser Gly Ser 275         Gly Pro Gly His Gly Ile 295         Glu Ala Tyr Val Ser Asn 310         Ala Glu Asn Gly Val Arg 325         Ala Ser Asn Ile Lys Phe	130       135         Ser Lys Ile Ser Asp Tyr Lys         Ser Val Gln Asn Leu Val Val         Arg Gln Val Trp Trp Pro Ser         Cys Arg Asp Ala Pro Thr Ala         195         Val Asn Asn Leu Lys Ser         Phe Glu Ser Cys Thr Asn Val         Ser Ala Lys Ser Pro Asn Thr         Tyr Ile Gln Ile Ser Asp Thr         Ser 11e Val Ser Gly Ser Gln         275         Gly Pro Gly His Gly Ile Ser         Glu Ala Tyr Val Ser       Asn Val         Ala Glu Asn Gly Val Arg Ile         Ala Ser Asn Ile Lys Phe Leu	130       135         Ser Lys Ile Ser Asp 150       Tyr Lys Asp 150         Ser Val Gln Asn Leu Val Val Gly 165       Yal Cal Yal Trp Trp Pro Ser Ser 185         Cys Arg Asp Asp Ala Pro Thr Ala Leu 200       Yal Asn Asn Leu Lys Ser Lys 215         Phe Glu Ser Cys Thr Asn Val Val 230       Yal Asp Asp Asp Pro Asn Thr Asp 245         Ser Ala Lys Ser Pro Asn Thr Asp 245       Pro Asp Thr 11e 265         Ser Ile Val Ser Gly Ser Gln Asn 280       Pro 280         Gly Pro Gly His Gly Ile Ser Ile 290       Pro Asn Val Thr 310         Ala Glu Asn Gly Val Arg Ile Lys Ala Ser Asn Ile Lys Phe Leu Asn	130       135         Ser Lys Ile Ser Asp 150       Tyr Lys Asp Arg 150         Ser Val Gln Asn Leu Val Val Gly 170         Arg Gln Val Trp Trp Pro Ser Ser Cys 185         Cys Arg Asp Ala Pro Thr Ala Leu Thr 195         Lys Val Asn Asn Leu Lys Ser Lys Asn 210         Phe Glu Ser Cys Thr Asn Val Val Ala 230         Ser Ala Lys Ser Pro Asn Thr Asp Gly 245         Tyr Ile Gln Ile Ser Asp Thr 11e Ile 11e 265         Ser Ile Val Ser Gly Ser Gln Asn Val 280         Gly Pro Gly His Gly Ile Ser Ile Gly 295         Glu Ala Tyr Val Ser Asn Val Thr Val 310         Ala Glu Asn Gly Val Arg Ile Lys Thr 330         Ala Ser Asn Ile Lys Phe Leu Asn Val	130       135         Ser Lys Ile Ser Asp Tyr Lys Asp Arg Arg 155         Ser Val Gln Asn Leu Val Val Gly Gly 170         Arg Gln Val Trp Trp Pro Ser Ser Cys Lys 185         Cys Arg Asp Ala Pro Thr Ala Leu Thr Phe 195         Lys Val Asn Asn Leu Lys Ser Lys Asn Ala 215         Phe Glu Ser Cys Thr Asn Val Val Ala Ser 235         Ser Ala Lys Ser Pro Asn Thr Asp Gly Val 255         Tyr Ile Gln Ile Ser Asp Thr Ile Ile Gly 265         Ser Ile Val Ser Gly Ser Gln Asn Val Gln 275         Gly Pro Gly His Gly Ile Ser Ile Gly Ser 295         Glu Ala Tyr Val Ser Asn Val Thr Val Asn 315         Ala Glu Asn Gly Val Arg Ile Lys Thr Trp 330         Ala Ser Asn Ile Lys Phe Leu Asn Val Glu	130       135       140         Ser Lys Ile Ser Asp Tyr Lys Asp Arg 155       Leu 150       Tyr Lys Asp Arg 155       Leu 155         Ser Val Gln Asn Leu Val Val Gly Gly Gly 160       Gly Gly Gly Gly 170       Gly Gly Gly Gly 170       Gly Gly Gly Gly 170         Arg Gln Val Trp Trp Trp Pro Ser Ser Ser Cys Lys Ile 185       Gly Lys Lys Ile 185       Gly Lys Lys Lys Ile 185         Cys Arg Asp Asp Ala Pro Thr Ala Leu Thr Phe Trp 200       Asn Ala Gln 220         Phe Glu Ser Cys Thr Asn Val Val Ala Ser Asn 235       Asn 235         Ser Ala Lys Ser Pro Asn Thr Asp Gly Val His 250       Yal His 250         Tyr Ile Gln Ile Ser Asp Thr Ile Ile Gly Thr 265       Thr 265         Ser Ile Val Ser Gly Ser Gln Asn Val Gln Ala 280       Ala Ser Leu 310         Gly Pro Gly His Gly Ile Ser Ile Gly Ser Leu 300       Glu Ala Tyr Val Ser Asn Val Thr Val Asn Glu 315         Ala Glu Asn Gly Val Arg Ile Lys Thr Trp Gln 330       Trp Gln 330         Ala Ser Asn Ile Lys Phe Leu Asn Val Glu Met	130	135	Ser Lys Ile Ser Asp Tyr Lys Asp Arg Arg Arg Leu Trp Ile Ala 150  Ser Val Gln Asn Leu Val Val Gly Gly Gly Gly Thr Ile Asn 175  Arg Gln Val Trp Trp Pro Ser Ser Cys Lys Ile Asn Lys Ser 180  Cys Arg Asp Ala Pro Thr Ala Leu Thr Phe Trp Asn Cys Lys 195  Lys Val Asn Asn Leu Lys Ser Lys Asn Ala Gln Gln Ile His 210  Phe Glu Ser Cys Thr Asn Val Val Ala Ser Asn Leu Met Ile 230  Ser Ala Lys Ser Pro Asn Thr Asp Gly Val His Val Ser Asn Ser 265  Tyr Ile Gln Ile Ser Asp Thr Ile Ile Gly Thr Gly Asp Asp 270  Ser Ile Val Ser Gly Ser Gln Asn Val Gln Ala Thr Asn Ile 285  Gly Pro Gly His Gly Ile Ser Ile Gly Ser Leu Gly Ser Gly 290  Glu Ala Tyr Val Ser Asn Val Thr Val Asn Glu Ala Lys Ile 310  Ala Glu Asn Gly Val Arg Ile Lys Thr Trp Gln Gly Gly Ser 335  Ala Ser Asn Ile Lys Phe Leu Asn Val Glu Met Gln Asp Val

Tyr Pro Ile Ile Ile Asp Gln Asn Tyr Cys Asp Arg Val Glu Pro Cys

360 365 355

```
Ile Gln Gln Phe Ser Ala Val Gln Val Lys Asn Val Val Tyr Glu Asn
                        375
                                            380
```

Ile Lys Gly Thr Ser Ala Thr Lys Val Ala Ile Lys Phe Asp Cys Ser 390

Thr Asn Phe Pro Cys Glu Gly Ile Ile Met Glu Asn Ile Asn Leu Val 405 410

Gly Glu Ser Gly Lys Pro Ser Glu Ala Thr Cys Lys Asn Val His Phe 420 425 430

Asn Asn Ala Glu His Val Thr Pro His Cys Thr Ser Leu Glu Ile Ser 440 435

Glu Asp Glu Ala Leu Leu Tyr Asn Tyr 450

```
<210> 49
```

<211> 7456

<212> DNA

<213> Lycopersicon esculentum

<220>

<221> CDS <222> (1479)..(1757)

<223>

<220>

<221> CDS

<222> (2416)..(2547)

<223>

<220>

<221> CDS

<222> (3327)..(3491)

<223>

<220>

<221> CDS

<222> (3696)..(3716)

<223>

<220>

```
<221> CDS
<222>
     (4260)..(4467)
<223>
<220>
<221> CDS
     (4567)..(4648)
<222>
<223>
<220>
<221> CDS
<222> (5602)..(5710)
<223>
<220>
<221> CDS
     (6139)..(6255)
<222>
<223>
<220>
<221> CDS
<222> (6788)..(7045)
<223>
<400> 49
aagcttctta aaaaggcaaa ttgattaatt tgaagtcaaa ataattaatt ataacaatgg
                                                               60
taaagcacct taagaaacca tagtttgaaa ggttaccaat gcgctatata ttaatcaact
                                                              120
tgataatata aaaaaaattt caattcgaaa agggcctaaa atattctcaa agtattcgaa
                                                              180
atggtacaaa actaccatcc gtccacctat tgactccaaa ataaaattat tatccacctt
                                                              240
tgagtttaaa attgactact tatataacaa ttctaaattt aaactatttt aatactttta
                                                              300
                                                              360
accaactacc aactcattaa tcattaaatc ccacccaaat tctactatca aaattgtcct
                                                              420
                                                              480
aaacactact aaaacaagac gaaattgttc gagtccgaat cgaagcacca atctaattta
                                                              540
qqttgaqccg catatttagg aggacacttt caatagtatt tttttcaagc atgaatttga
                                                              600
aatttaagat taatggtaaa gaagtagtac acccgaatta attcatgcct tttttaaata
                                                              660
taattatata aatatttatg atttgtttta aatattaaaa cttgaatata ttattttaa
                                                              720
aaaaattatc tattaagtac catcacataa ttgagacgag gaataattaa gatgaacata
                                                              780
840
ttataacaaa tatttgagcg ccatgtattt taaaaaaatat taaataagtt tgaatttaaa
```

accgttagat aaatggtcaa ttttgaaccc aaaagtggat gagaagggta ttttagagcc	900
aataggggga tgagaaggat attttgaagc caatatgtga tggatggagg ataattttgt	960
atcatttcta atactttaaa gatattttag gtcattttcc cttctttagt ttatagacta	1020
tagtgttagt tcatcgaata tcatctatta tttccgtctt aaattatttt ttatttata	1080
aatttttaaa aaataaatta ttttttccat ttaactttga ttgtaattaa tttttaaaaa	1140
ttaccaacat ataaataaaa ttaatattta acaaagaatt gtaacataat attttttaa	1200
ttattcaaaa taaatatttt taaacatcat ataaaagaaa tacgacaaaa aaattgagac	1260
gggagaagac aagccagaca aaaatgtcca agaaactctt tcgtctaaat atctctcatc	1320
caaactaata taatacccat tacaattaac catattgacc aactcaaacc ccttaaaatc	1380
tataaataga caaacccttc ccatacctct tatcataaaa aaaataataa tctttttcaa	1440
tagacaagtt taaaaaccat accatataac aatatatc atg gtt atc caa agg aat Met Val Ile Gln Arg Asn 1 5	1496
agt att ctc ctt ctc att att ttt gct tca tca att tca act tgt Ser Ile Leu Leu Ile Ile Ile Phe Ala Ser Ser Ile Ser Thr Cys 10 15 20	1544
aga agc aat gtt att gat gac aat tta ttc aaa caa gtt tat gat aat Arg Ser Asn Val Ile Asp Asp Asn Leu Phe Lys Gln Val Tyr Asp Asn 25 30 35	1592
att ctt gaa caa gaa ttt gct cat gat ttt caa gct tat ctt tct tat Ile Leu Glu Gln Glu Phe Ala His Asp Phe Gln Ala Tyr Leu Ser Tyr 40 45 50	1640
ttg agc aaa aat att gaa agc aac aat aat att gac aag gtt gat aaa Leu Ser Lys Asn Ile Glu Ser Asn Asn Asn Ile Asp Lys Val Asp Lys 55 60 65 70	1688
aat ggg att aaa gtg att aat gta ctt agc ttt gga gct aag ggt gat Asn Gly Ile Lys Val Ile Asn Val Leu Ser Phe Gly Ala Lys Gly Asp 75 80 85	1736
gga aaa aca tat gat aat att gtaagtattt aaatattgga atatatttgt Gly Lys Thr Tyr Asp Asn Ile 90	1787
ggggatgaaa atgatagaga atataagaat tatttggaag gatgaaaagt tatattttat	1847
aaagtagaaa attattttct cgtttttagt attaaggtga aaatgagttt ctcgttaagc	1907
gaggaaaagc tattttccat ggtaactgta ttttttttt acttttaata acgtcatagt	1967
atttgctata ctcaagaata agacacttat tattgatgat ttagtgctcg aaaagaaatt	2027

•

gatagtaatt ttgcttaata taactatcaa tttcttatat gtatattttt caaccaaaat	2087
aacaaagcgt aatccaataa gtgggcctct agaataaaga gtaagttcta ttcaattctt	2147
aaccttattt aattttagtg gaaacctcga caaaacgaa caaacgtatt caaactttta	2207
tattoggaat togagaccaa coatatgaac aacotcacac atgoatatag tootaatata	2267
tataattttt ctaaaaaata tottoaatot accatattga aatattgaaa aatgactttt	2327
atcctatcga acacataatc aagagtttct tttaagaatt taccactaca tttggtatgt	2387
ttcttatcgt gttaaaatta tctttcag gca ttt gag caa gca tgg aat gaa Ala Phe Glu Gln Ala Trp Asn Glu 95	2439
gca tgt tca tct aga aca cct gtt caa ttt gtg gtt cct aaa aac aag Ala Cys Ser Ser Arg Thr Pro Val Gln Phe Val Val Pro Lys Asn Lys 105 110 115	2487
aat tat ctt ctc aag caa atc acc ttt tca ggt cca tgc aga tct tct Asn Tyr Leu Leu Lys Gln Ile Thr Phe Ser Gly Pro Cys Arg Ser Ser 120 125 130	2535
att tca gta aag gttagcatat tgattattta tatcctcttt gttagcaata Ile Ser Val Lys 135	2587
tattatctgg tttatgacaa aatttaagaa agtaatcaaa gatagataaa caatgaattt	2647
tcgtcactaa tttagcggat tagtgaggaa ttatcaaaat gttatgttag ctatgagcaa	2707
cttagctatg aattagctag tgaagaagtt tgatgctaat tctattttt ttttgtagag	2767
taaagatatt tgaaacacat gtattaatta ttaattatgt cttaattaat atgtcaatgg	2827
atagttcaaa ctaaagaact gtcaaaagaa aataagaaag aaatatttat ttttaaaaata	2887
aattaaaaag aaaaatatga gaaataaatt caaagcgaga aggtattaca taatctatgg	2947
ggataaaagg atattatata tgtaagaaaa cagcactaca catatctaat aaagtctcat	3007
aaatggatat aaaaaatagt gtgtaagcaa cagttatccc tacaaaaact tttgtggggt	3067
agatcgatcc agaggttgtt tccagactct tgcttaaaaa aaatgttttt tctaaataag	3127
tttgaaagaa atgttatatg atgaaaatat gaagaaaaac atatcaatat taaaaataat	3187
aaagtaatca aagtaaacga aataacaata ggaataatac tcataaatga aaatttagtg	3247
gcttttcgtt aacataatct tagtttattc attgtttctt taatttccct tcttattttt	3307
tttgaaatta ctaatgcag att ttt gga tcc tta gaa gca tct agt aaa att Ile Phe Gly Ser Leu Glu Ala Ser Ser Lys Ile 140 145	3359
tca gac tac aaa gat aga agg ctt tgg att gct ttt gat agt gtt caa	3407

Ser Asp Tyr Lys Asp Arg Arg Leu Trp Ile Ala Phe Asp Ser Val Gln 150 160	
aat tta gtt gtt gga gga gga gga act atc aat ggc aat gga caa gta Asn Leu Val Val Gly Gly Gly Gly Thr Ile Asn Gly Asn Gly Gln Val 165 170 175	3455
tgg tgg cca agt tct tgc aaa ata aat aaa tca ctg gtaattttat Trp Trp Pro Ser Ser Cys Lys Ile Asn Lys Ser Leu 185 190	3501
aaccttgctt ataagtttta cgctatgttg ctcgaattct ttaaacttgt tctaaagata	3561
ttatatattt gaaggaggtg tcacaaatgc atcacatttt tagagattcc gaccaatatt	3621
agttttatgt aatctaattt tcagagcatc tttgccttgt actgatcatt gttacccttt	3681
ttttcttcat gcag cca tgc agg gat gca cca acg gtacgttaat tgcatttgat Pro Cys Arg Asp Ala Pro Thr 195	3736
ttgataaaaa aaaaaagcct aaaatatatt tgaattttaa ttgaaaggtt ataataattc	3796
ttaactttgg gcaggaccta ttaccccttg cactatttaa tagtgtattt taaagatata	3856
aaagtgttta gttgaaacaa aaatttagat attcaaaaac tatttgaaaa ttactataaa	3916
ttgcaatttt tttgcatatc aatatgatta aaaaatatta gttaaagttc ttatgatttg	3976
attctaaaaa taaaaatcat gacaaacaat agtagacgga gaaagtatat aacaatacct	4036
cttcaagtag aatcgatttg tacacacacc tcaaaaccta cgttttcttc gatttatatt	4096
toctatttot titaatagta atcaaaggot attagttotg toaaaatota tacattggaa	4156
actctatctt tgacgcctcg tacattcgag atcgttgaac aatggatgaa tgattattta	4216
actitgtatt taaatattaa aactaatatt gittaatitt cag gcc ita acc itc Ala Leu Thr Phe 200	4271
tgg aat tgc aaa aat ttg aaa gtg aat aat cta aag agt aaa aat gca Trp Asn Cys Lys Asn Leu Lys Val Asn Asn Leu Lys Ser Lys Asn Ala 205 210 215	4319
caa caa att cat atc aaa ttt gag tca tgc act aat gtt gta gct tca Gln Gln Ile His Ile Lys Phe Glu Ser Cys Thr Asn Val Val Ala Ser 220 225 230 235	4367
aat ttg atg atc aat gct tca gca aag agc cca aat act gat gga gtc Asn Leu Met Ile Asn Ala Ser Ala Lys Ser Pro Asn Thr Asp Gly Val 240 245 250	4415
caa gta tca aat act caa tat att caa ata tct gat act att att gga Gln Val Ser Asn Thr Gln Tyr Ile Gln Ile Ser Asp Thr Ile Ile Gly 255 260 265	4463

aca g gtttatttat ttaattttta tttatccaat ttaattagaa aaaaaaagga Thr	4517
gtattttat ttgataacta aattattaat ttttaatttt tttttatag gt gat ga	4574
tgt att tca att gtt tct gga tct caa aat gtg cag gcc aca aat att Cys Ile Ser Ile Val Ser Gly Ser Gln Asn Val Gln Ala Thr Asn Ile 275 280 285	4622
act tgt ggt cca ggt cat ggt ata ag gtactctatt ttacaaatat Thr Cys Gly Pro Gly His Gly Ile Ser 290 295	4668
acttgtttcc attttctcta tttcataaaa ggtagtatga tataataatt actttaaatc	4728
ctttaattaa tttattggca aattttttct cttgtcttta tggttaatga cttagcacaa	4788
taattagggc cgtttggatg ggcgaataaa agcagcttta aaaaagtact tttaaaagtg	4848
ttgaaactta tttttaaaat aagcagttat cggtttggat aaaagtgctg aagttgttat	4908
gtcaaacgtg aaaagggaaa aatggaagaa agaaatgtta gggttatatg ggttatttgt	4968
ataaaaatat taagcacaaa aagataaaaa tgtggtcaac ttaaaacaac ttataagcta	5028
ccctacccta ccccagcttt taacttttgg cttaaaataa gtttttttt ttaaaactta	5088
aaataagttg ttttgagtat tgccaaagag ctaaataatg caaaaaccag cttttaagtc	5148
agtttgacca gcttttaagc tgagccaaac aggctcttaa aatgtctgct tagatgtgct	5208
atatatattt gagetttttt tgaagtagta tattateett aagtteaaca taaaatacat	5268
gctttaacat agcacatata gttaatcaaa agacgaaatg atgaataatt ttgcgaattt	5328
gattattcac aagaaaaggg atagttcaaa gtgtacattt caatgaattg aagatatcat	5388
aaagactaaa attagaagaa tcaataattg agggatcaaa aatgttatta ccttattaaa	5448
atactattcc attttcatat taaattaact aattaagagt gttttataat ctaataaaac	5508
atgcaataat tattgacgaa atgtggtttt ggtacctata atctttctga atatttgctc	5568
tatttttct ctttttattt ttccatggat tac t att gga agc tta gga tct Ile Gly Ser Leu Gly Ser 300	5620
gga aat toa gaa got tat gtg tot aat gtt act gta aat gaa goo aaa Gly Asn Ser Glu Ala Tyr Val Ser Asn Val Thr Val Asn Glu Ala Lys 305 310 315	5668
att atc ggt gcc gaa aat gga gtt agg atc aag act tgg cag Ile Ile Gly Ala Glu Asn Gly Val Arg Ile Lys Thr Trp Gln 320 325 330	5710

. . .

gtaccetece eccecece eccecacag geneattitt traattitt traattitt	5770
attcgaatat caatattaaa gattaatttg atttcatgtt tgaaatttat atttggataa	5830
agtatgtatt ttactagctt tctatgttat atagaaaaaa aaatgttcag aacttcagat	5890
tattgtactc gtactaagtg taaatgtgtt gctttgttta gaagtttggt ttatccagtt	5950
ttgggtcatg attaaaccaa acttataatg aaaaggggct gcaacggccg gcccactagt	6010
gctagtatca ataggaagat ctcacgtctg tttattcaga tggacgttct tggttgaatg	6070
ttaataatta taaatttaat taacatgtaa ttaagcatta tataaattaa tgtggtttaa	6130
taatgtag gga gga tct gga caa gct agc aac atc aaa ttt ctg aat gtg Gly Gly Ser Gly Gln Ala Ser Asn Ile Lys Phe Leu Asn Val 335 340 345	6180
gaa atg caa gac gtt aag tat ccc ata att ata gac caa aac tat tgt Glu Met Gln Asp Val Lys Tyr Pro Ile Ile Ile Asp Gln Asn Tyr Cys 350 355 360	6228
gat cga gtt gaa cca tgt ata caa cag gtaatttttt attaacgaac Asp Arg Val Glu Pro Cys Ile Gln Gln 365 370	6275
aatttattat attttattac ttcttaaatc accttacatc attaaaactt tgagattctt	6335
ttcactagtt agtaactttt tgaatagatt tttagtaaat gatattcatt attcctttta	6395
tttttcttct aatttatgga tcttttggac tatggtctaa aaatcttgtt aaagtaaact	6455
gaatatcata agaaaaaatg ttagattata atctaaattt tttataaatt attagacgtt	6515
atctaatatt ttgtatgtaa gattgagaaa catatacata aaacattaga ttcaaattta	6575
ataatatcta aaatattgat tcaaatcaat catgactaca caaacgaata catgcagatt	6635
ctcaaacata tagatgaagt catttcaaaa cgaatcaaat atagtagagt atatccttaa	6695
aagagagcat ttgggtaaat aagtaaaaat cattaagtta taaaaaaaat tctaactcga	6755
tctctcacga ttatttaatc actttgttcc ag ttt tca gca gtt caa gtg aaa Phe Ser Ala Val Gln Val Lys 375	6808
aat gtg gtg tat gag aat atc aag ggc aca agt gca aca aag gtg gcc Asn Val Val Tyr Glu Asn Ile Lys Gly Thr Ser Ala Thr Lys Val Ala 380 385 390	6856
ata aaa ttt gat tgc agc aca aac ttt cca tgt gaa gga att ata atg Ile Lys Phe Asp Cys Ser Thr Asn Phe Pro Cys Glu Gly Ile Ile Met 395 400 405 410	6904
gag aat ata aat tta gta ggg gaa agt gga aaa cca tca gag gct acg Glu Asn Ile Asn Leu Val Gly Glu Ser Gly Lys Pro Ser Glu Ala Thr	6952

415

tgc aaa aat gtc cat ttt aac aat gct gaa cat gtt aca cca cac tgc Cys Lys Asn Val His Phe Asn Asn Ala Glu His Val Thr Pro His Cys 430 435 440	7000
act tca cta gaa att tca gag gat gaa gct ctt ttg tat aat tat Thr Ser Leu Glu Ile Ser Glu Asp Glu Ala Leu Leu Tyr Asn Tyr 445 450 455	7045
taatttatac tatagatctt caatatatag cagatatgat atatcacaat aaacaaatct	7105
atatctatgt attgaataat tattattaat atgtacggat tgaagtttta ataagactac	7165
tatgtatttc tattttctag tcaaaagttt gacgattgta ctttttaatg tacaaaaata	7225
ataaaatggt tatttatatg atgtatatat ccctttggta tttcttgttg aactataatg	7285
tcattattta ataactatta tctgtgcaat gattgtattt gttaatgata cataatatat	7345
ctttcatcat tgataataag aataaaatat tttacgtcta ttactttgtg aattatatgt	7405
agattttagt ttttgtttta tttttaatta aaccgagtga aatataaaga g	7456

<210> 50

<211> 457

<212> PRT

<213> Lycopersicon esculentum

<400> 50

Met Val Ile Gln Arg Asn Ser Ile Leu Leu Leu Ile Ile Ile Phe Ala 1 5 10 15

Ser Ser Ile Ser Thr Cys Arg Ser Asn Val Ile Asp Asp Asn Leu Phe 20 25 30

Lys Gln Val Tyr Asp Asn Ile Leu Glu Gln Glu Phe Ala His Asp Phe 35 40 45

Gln Ala Tyr Leu Ser Tyr Leu Ser Lys Asn Ile Glu Ser Asn Asn Asn 50 55 60

Ile Asp Lys Val Asp Lys Asn Gly Ile Lys Val Ile Asn Val Leu Ser 65 70 75 80

Phe Gly Ala Lys Gly Asp Gly Lys Thr Tyr Asp Asn Ile Ala Phe Glu 85 90 95

Gln Ala Trp Asn Glu Ala Cys Ser Ser Arg Thr Pro Val Gln Phe Val

100 105 110

Val	Pro	Lys 115	Asn	Lys	Asn		Leu 120	Leu	Lys	Gln	Ile	Thr 125	Phe	Ser	Gly
Pro	Cys 130	Arg	Ser	Ser	Ile	Ser	Val	Lys	Ile	Phe	Gly 140	Ser	Leu	Glu	Ala

Ser Ser Lys Ile Ser Asp Tyr Lys Asp Arg Arg Leu Trp Ile Ala Phe 145 150 155 160

Asp Ser Val Gln Asn Leu Val Val Gly Gly Gly Gly Thr Ile Asn Gly 165 170 175

Asn Gly Gln Val Trp Trp Pro Ser Ser Cys Lys Ile Asn Lys Ser Leu 180 185 190

Pro Cys Arg Asp Ala Pro Thr Ala Leu Thr Phe Trp Asn Cys Lys Asn 195 200 205

Leu Lys Val Asn Asn Leu Lys Ser Lys Asn Ala Gln Gln Ile His Ile 210 215 220

Lys Phe Glu Ser Cys Thr Asn Val Val Ala Ser Asn Leu Met Ile Asn 225 230 235 240

Ala Ser Ala Lys Ser Pro Asn Thr Asp Gly Val Gln Val Ser Asn Thr 245 250 255

Gln Tyr Ile Gln Ile Ser Asp Thr Ile Ile Gly Thr Gly Asp Asp Cys 260 265 270

Ile Ser Ile Val Ser Gly Ser Gln Asn Val Gln Ala Thr Asn Ile Thr 275 280 285

Cys Gly Pro Gly His Gly Ile Ser Ile Gly Ser Leu Gly Ser Gly Asn 290 295 300

Ser Glu Ala Tyr Val Ser Asn Val Thr Val Asn Glu Ala Lys Ile Ile 305 310 315 320

Gly Ala Glu Asn Gly Val Arg Ile Lys Thr Trp Gln Gly Gly Ser Gly 325 330 335

Gln Ala Ser Asn Ile Lys Phe Leu Asn Val Glu Met Gln Asp Val Lys 340 345 350

Tyr Pro Ile Ile Ile Asp Gln Asn Tyr Cys Asp Arg Val Glu Pro Cys 355 360 365

Ile Gln Gln Phe Ser Ala Val Gln Val Lys Asn Val Val Tyr Glu Asn 370 375 380

Ile Lys Gly Thr Ser Ala Thr Lys Val Ala Ile Lys Phe Asp Cys Ser 385 390 395 400

Thr Asn Phe Pro Cys Glu Gly Ile Ile Met Glu Asn Ile Asn Leu Val 405 410 415

Gly Glu Ser Gly Lys Pro Ser Glu Ala Thr Cys Lys Asn Val His Phe 420 425 430

Asn Asn Ala Glu His Val Thr Pro His Cys Thr Ser Leu Glu Ile Ser 435 440 445

Glu Asp Glu Ala Leu Leu Tyr Asn Tyr 450 455